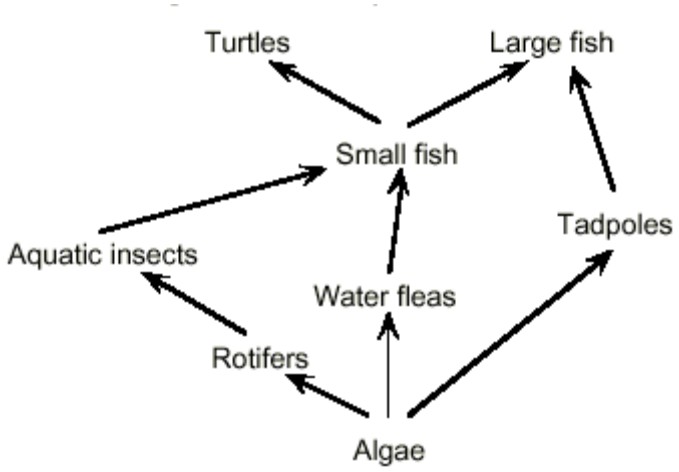
The diagram shows part of an aquatic food web for a stable lake ecosystem in Connecticut.



What is the source of energy for the algae?

a. waves
b. sunlight
c. bacteria
d. rotifers, water fleas and tadpoles

Students understand how the number and variety of organisms and populations are dependent on the resources and physical factors of their environment.

- ***Explain how changes in resources, predation and climate can affect the growth of different populations. (LIB1)***

The highest concentration of life exists in the top 200 meters of ocean water. The **most important factor** that influences this concentration of life is the

a. amount of gases at the surface.
b. amount of nutrients in the water.
c. large number of predators at lower depths.
d. amount of sunlight.

In the longstanding war between coyotes and sheep ranchers in New Mexico, studies show that coyotes kill sheep and the percentage of sheep lost from herds in areas where coyotes have been exterminated is about the same as the percentage lost in areas where coyotes are still present.

What is the **most likely** explanation for the similarity in the percentage of sheep lost in both areas?

a. Coyotes were protecting sheep.
b. The sheep died from overcrowding.
c. Another predator was killing sheep.
d. Coyotes were preying on sick or weak sheep.

Effects of Hurricane Hugo on Bat Species

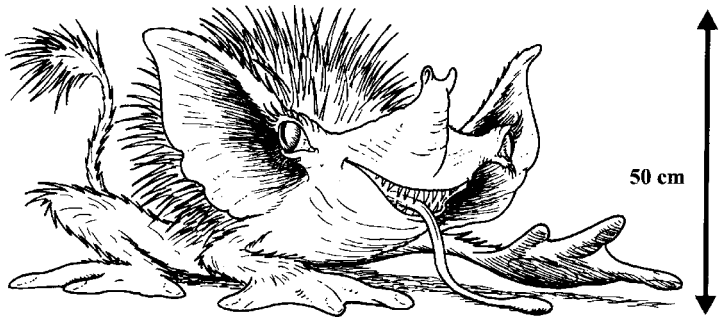
Bat Species	Food Source	Population Change
Jamaican Fruit Bat	fruit	sharp decline
Red Bat	figs	sharp decline
Long-tongue Bat	nectar from flowers	slight increase

Bats comprise 75 percent of the mammals native to Puerto Rico. In 1989, Hurricane Hugo flattened a large section of the rain forest in Puerto Rico. Researchers collected data about the effects of the hurricane on three different species of bats. The results are shown in the chart above.

1. Discuss **three** possible reasons for the changes in the bat populations.
2. Predict the role the bats would have in the recovery of this rain forest.

- ***Explain how organisms are adapted to environmental conditions in different biomes. (LIB2)***

Study the picture of the imaginary animal below. **Based on its features,** make **scientific** inferences about the animal's habitat and about its niche. In other words, tell about the kind of area it might live in, what it might eat, and what role it might play in its community. **Be sure to explain your reasoning.**

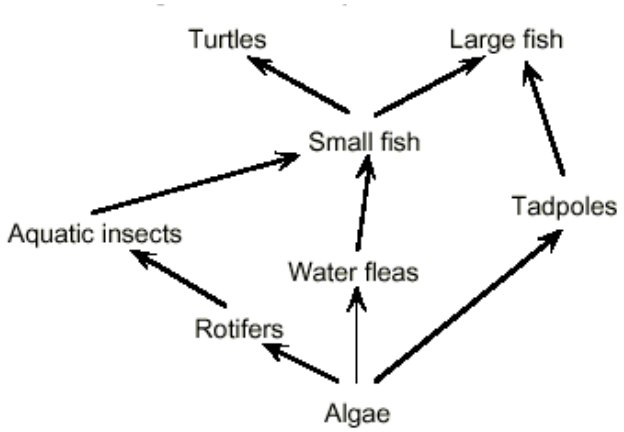


Sponges are sessile (permanently attached organisms) and rely on water currents for their survival. Which biological process(es) are **directly** affected by this way of life?

a. reproduction and feeding
b. response and growth
c. development
d. protein synthesis

- ***Explain how human activity can impact the stability of various ecosystems. (LIB3)***

For a long-term ecology study, a meadow in a large forest is divided into two plots. One plot is mowed once a year, while the other plot is not. Describe what each plot will look like after 40 years and justify your answer.



A company wants to build a factory to produce weed killer. The new factory will be located close to the lake ecosystem with the food web shown in the diagram above. What would happen if weed killer from the factory were to pollute the lake? In your response, be sure to include two ways the aquatic food chain could be affected.